UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 66511

CSAH NO. 12

OVER THE

CANNON RIVER

DISTRICT 6 - RICE COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 25A)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 66511, Piers 1 and 2, were found to be in good to satisfactory condition with no defects of structural significance observed. The channel bottom appeared stable with no changes of concern since the previous inspection.

INSPECTION FINDINGS:

(A) The steel casings of the pier piles were in good condition with light to moderate corrosion from the channel bottom to 6 inches above the waterline, with the deterioration slightly heavier near the waterline, with ¼ inch nodules on less than 10 percent of the surface areas, and with no noticeable loss of section. Coating failure on all piles is from 50 to 100 percent and around normal water levels it is at 100 percent.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 66511

Feature Crossed: Cannon River

Feature Carried: CSAH No. 12

Location: District 6 - Rice County

Bridge Description: The bridge consists of three spans of multiple steel stringers supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and two pile bent piers. The piers consist of six steel encased (shell) concrete piles supporting a reinforced concrete cap. The piers are labeled Piers 1 and 2 starting from the east end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 23, 2007

Weather Conditions: Sunny, 60°F

Underwater Visibility: 5.0 feet

Waterway Velocity: 1.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers consist of six cast-in-place concrete piles with steel casings (shells) supporting a reinforced concrete cap.

Maximum Water Depth at Substructure Inspected: Approximately 5.7 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pile cap on the north end of Pier 2.

Water Surface: The waterline was approximately 7.6 feet below reference.
Waterline Elevation = 978.0.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 8

Item 92B: Underwater Inspection: Code B/10/07

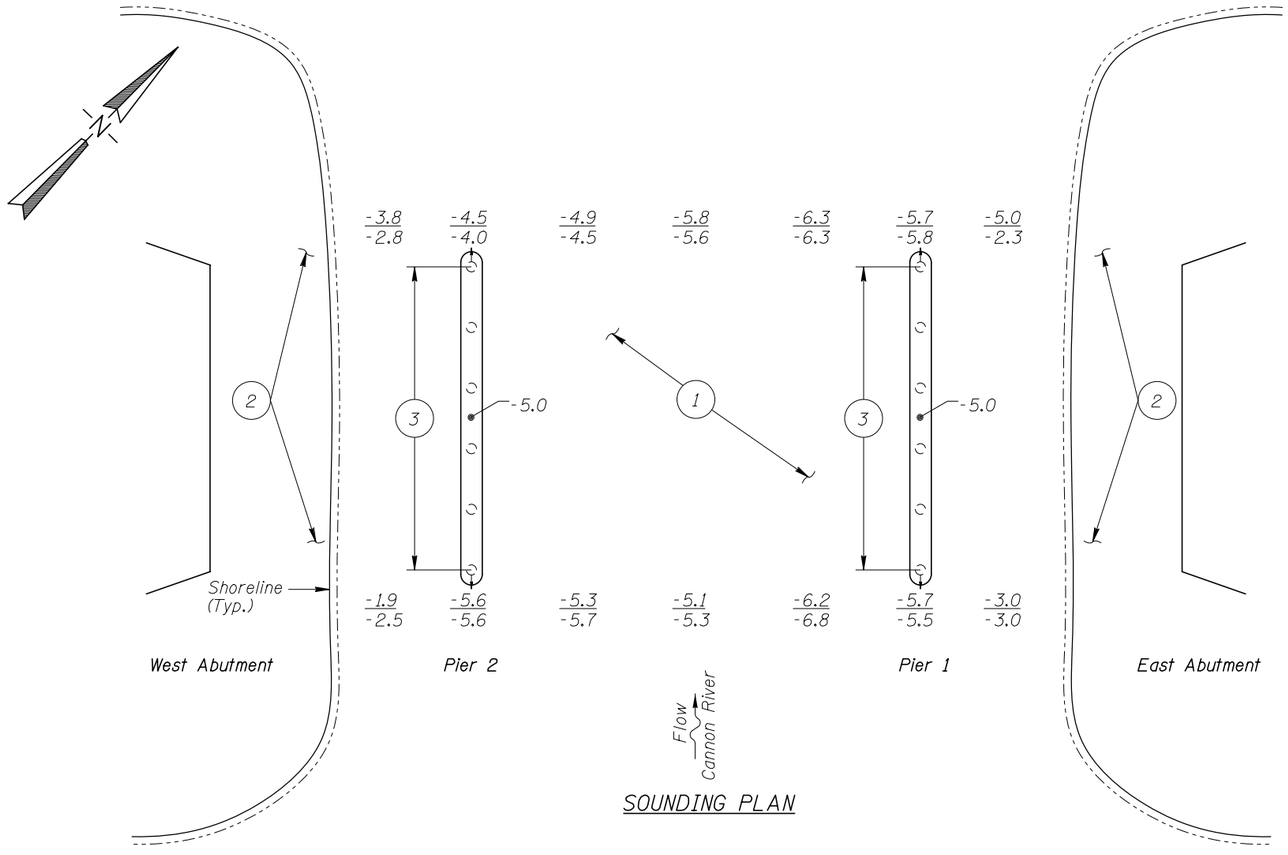
Item 113: Scour Critical Bridges: Code I/91

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

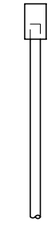
_____Yes X No

Photograph 1. View of Pier 1, Looking North.

Photograph 2. View of Pier 2, Looking North.



SOUNDING PLAN



TYPICAL END VIEW OF PIERS

GENERAL NOTES:

1. Piers 1 and 2 were inspected at this bridge.
2. At the time of inspection on October 23, 2007, the waterline was located approximately 7.6 feet below the top of the cap at the north end of Pier 2. This corresponds to a waterline elevation of 978.0 based on design drawings.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

(1) The channel bottom material consisted of gravel with cobbles and riprap, 2 foot diameter and smaller, with no probe rod penetration possible.

(2) Riprap, 4 feet diameter and smaller, serves as a protective barrier between the abutment and channel.

(3) Light to moderate corrosion on the steel casings from the channel bottom to 6 inches above the waterline, slightly heavier near the waterline with 1/4 inch nodules. No noticeable loss of section. Coating failure on all piles 50 to 100% and 100% around the waterline. The concrete caps are in good, sound condition.

Note:

All soundings based on 2007 waterline location.

Legend

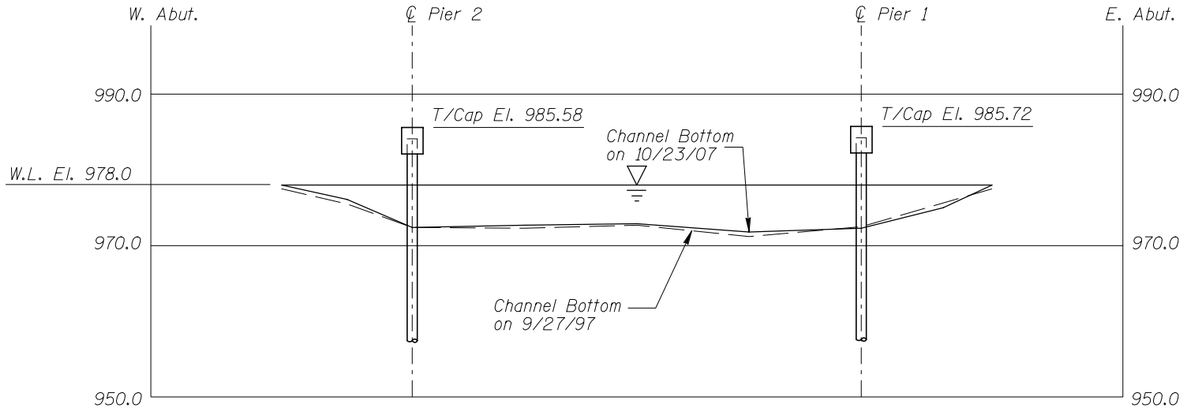
-2.3	Sounding Depth (10/23/07)
-2.2	Sounding Depth (9/27/97)
	CIP Concrete Pile w/ Steel Casing (under cap)
	CIP Battered Concrete Pile w/ Steel Casing (under cap)

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

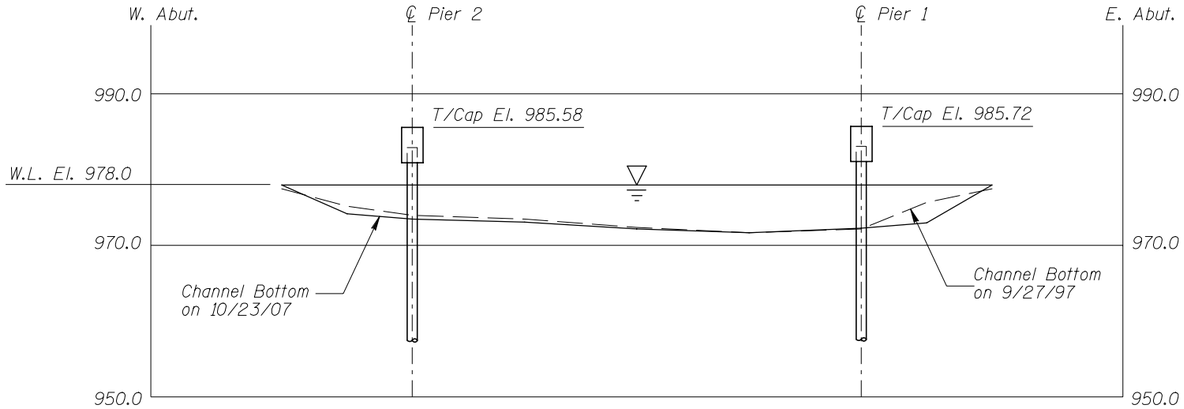
STRUCTURE NO. 6651I
OVER THE CANNON RIVER
DISTRICT 6, RICE COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: LJ	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT.2007
Checked By: VR		Scale: NTS
Code: 52210108		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 66511
OVER THE CANNON RIVER
DISTRICT 6, RICE COUNTY

UPSTREAM AND DOWNSTREAM
FASCIA PROFILES

Drawn By: LJ	COLLINS ENGINEERS 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT.2007
Checked By: VR		Scale: 1"=20'
Code: 52210108		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 23, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.

BRIDGE NO: 66511 WEATHER: Sunny, 60°F

WATERWAY CROSSED: Cannon River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER _____

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: Scuba, Sounding Pole, Lead Line, Probe Rod, Camera, Scraper

TIME IN WATER: 12:30 p.m.

TIME OUT OF WATER: 12:55 p.m.

WATERWAY DATA: VELOCITY 1.0 f.p.s

VISIBILITY 5.0 feet

DEPTH 5.7 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: The steel casings were in good to satisfactory condition with light to moderate corrosion from the channel bottom to 6 inches above the waterline, with deterioration slightly heavier near the waterline, with ¼ inch nodules on less than 10 percent of the surface areas, and with no noticeable loss of section. Coating failure on all piles is from 50 to 100 percent and around the waterline it is at 100 percent. The channel bottom appeared stable with no significant signs of degradation / scour since the last inspection.

FURTHER ACTION NEEDED: _____ YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 66511
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED Cannon River

INSPECTION DATE October 23, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	5.7	7	N	N	9	N	7	8	8	8	N	8	N	7	N	N	N	N
	Pier 2	5.6’	7	N	N	9	N	7	8	8	8	N	8	N	7	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: The steel casings were in good to satisfactory condition with light to moderate corrosion from the channel bottom to 6 inches above the waterline, with deterioration slightly heavier near the waterline, with ¼ inch nodules on less than 10 percent of the surface areas, and with no noticeable loss of section. Coating failure on all piles is from 50 to 100 percent and around the waterline it is at 100 percent. The channel bottom appeared stable with no significant signs of degradation / scour since the last inspection.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.